ACTA METALLURGICA
CONTENTS OF VOLUME 37

NUMBER 1

H. Ackermann, G. Inden and R. Kikuchi	1	Tetrahedron approximation of the cluster variation method for b.c.c. alloys
A. G. Dirks and J. J. van den Broek	9	θ-Al_2Cu formation at room temperature in metastable Al–Cu alloy films
P. Gas, S. Poize, J. Bernardini and F. Cabane	17	A new approach to correlate grain boundary diffusion and segregation deduced from experimental measurements
W. Krauss, S. K. Pabi and H. Gleiter	25	On the mechanism of martensite nucleation
Kyung Tae Hong and Soo Woo Nam	31	Kinetics of serrated flow in terms of dislocation interaction
S. Banerjee, U. D. Kulkarni and K. Urban	35	Initial stages of ordering in Ni_3Mo—thermal and irradiation ordering experiments
G. Eggeler, J. C. Earthman, N. Nilsvang and B. Ilschner	49	Microstructural study of creep rupture in a 12% chromium ferritic steel
M. A. Morris and D. G. Morris	61	Segregation structures of melt-spun Cu–Si–B alloys and their high temperature deformation behaviour
L. C. Brown	71	A new examination of classical coarsening theory
C. M. Su and T. S. Kê	79	High temperature internal friction peak in single-crystals and bamboo-crystals of aluminium after twisting and annealing
M. L. Jokl, V. Vitek, C. J. McMahon Jr and P. Burgers	87	On the micromechanics of brittle fracture: existing vs injected cracks
R. Becker, A. Needleman, S. Suresh, V. Tvergaard and A. K. Vasudevan	99	An analysis of ductile failure by grain boundary void growth
N. C. Tso, M. Kosugi and J. M. Sanchez	121	The effect of the structural energy of Cr on the Ni–Cr equilibrium phase diagram
O. Hunderi, E. Nes and N. Ryum	129	On the Zener-drag—addendum
K. Marthinsen, O. Lohne and E. Nes	135	The development of recrystallization microstructures studied experimentally and by computer simulation

ACTA METALLURGICA
CONTENTS OF VOLUME 37

NUMBER 1

H. Ackermann, G. Inden and R. Kikuchi	1	Tetrahedron approximation of the cluster variation method for b.c.c. alloys
A. G. Dirks and J. J. van den Broek	9	θ-Al_2Cu formation at room temperature in metastable Al–Cu alloy films
P. Gas, S. Poize, J. Bernardini and F. Cabane	17	A new approach to correlate grain boundary diffusion and segregation deduced from experimental measurements
W. Krauss, S. K. Pabi and H. Gleiter	25	On the mechanism of martensite nucleation
Kyung Tae Hong and Soo Woo Nam	31	Kinetics of serrated flow in terms of dislocation interaction
S. Banerjee, U. D. Kulkarni and K. Urban	35	Initial stages of ordering in Ni_3Mo—thermal and irradiation ordering experiments
G. Eggeler, J. C. Earthman, N. Nilsvang and B. Ilschner	49	Microstructural study of creep rupture in a 12% chromium ferritic steel
M. A. Morris and D. G. Morris	61	Segregation structures of melt-spun Cu–Si–B alloys and their high temperature deformation behaviour
L. C. Brown	71	A new examination of classical coarsening theory
C. M. Su and T. S. Kê	79	High temperature internal friction peak in single-crystals and bamboo-crystals of aluminium after twisting and annealing
M. L. Jokl, V. Vitek, C. J. McMahon Jr and P. Burgers	87	On the micromechanics of brittle fracture: existing vs injected cracks
R. Becker, A. Needleman, S. Suresh, V. Tvergaard and A. K. Vasudevan	99	An analysis of ductile failure by grain boundary void growth
N. C. Tso, M. Kosugi and J. M. Sanchez	121	The effect of the structural energy of Cr on the Ni–Cr equilibrium phase diagram
O. Hunderi, E. Nes and N. Ryum	129	On the Zener-drag—addendum
K. Marthinsen, O. Lohne and E. Nes	135	The development of recrystallization microstructures studied experimentally and by computer simulation

X. L. He, Y. Y. Chu and J. J. Jonas	147	Grain boundary segregation of boron during continuous cooling
T. Suzuki, R. Kojima, Y. Fujii and A. Nagasawa	163	Reverse transformation behaviour of the stabilized martensite in Cu–Zn–Al alloy
J. Kameda and W. A. Spitzig	169	Hydrogen-assisted ductile fracture in porous iron
J. Ågren	181	A simplified treatment of the transition from diffusion controlled to diffusion-less growth
D. Khireddine, R. Rahouadj and M. Clavel	191	The influence of δ' and S′ precipitation on low cycle fatigue behaviour of an aluminium alloy
Y.-H. Chiao and D. R. Clarke	203	Direct observation of dislocation emission from crack tips in silicon at high temperatures
Won-Hyuk Rhee and Duk N. Yoon	221	The grain boundary migration induced by diffusional coherency strain in Mo–Ni alloy
E. Blank, P. Henriquez and W. Funk	229	Variation of fiber morphology and crystallographic orientation relationship in directionally solidified Ni–Al–Mo alloys
Zhang Jihua, Chen Shuchuan and T. Y. Hsu (Xu Zuyao)	241	An investigation of internal friction within the incubation period of the bainitic transformation
Yeon-Wook Kim, Hong-Ming Lin and T. F. Kelly	247	Amorphous solidification of pure metals in submicron spheres
B. Caroli, C. Caroli, B. Roulet and P. W. Voorhees	257	Effect of elastic stresses on the morphological stability of a solid sphere growing from a supersaturated melt
H. Rauh, C. A. Hippsley and R. Bullough	269	The effect of mixed-mode loading on stress-driven solute segregation during high-temperature brittle intergranular fracture
N. R. Moody, S. L. Robinson, S. M. Myers and F. A. Greulich	281	Deuterium concentration profiles in Fe–Ni–Co alloys electrochemically charged at room temperature
V. V. Balasubrahmanyam and S. P. Gupta	291	Kinetics of cellular precipitation and discontinuous coarsening of the cellular precipitate in Cu–Sb alloys
L. Clapham and R. W. Smith	303	Partial modification in unidirectionally solidified Al–Si eutectic alloys
K. Negita	313	Lattice vibrations and cubic to tetragonal phase transition in ZrO_2
Song Shenhua, Xu Tingdong and Yuan Zhexi	319	Determination of critical time and critical cooling rate of non-equilibrium grain-boundary segregation

NUMBER 2

Bao-Tong Ma and C. Laird 325 Overview No. 77: Overview of fatigue behavior in copper single crystals—I. Surface morphology and Stage I crack initiation sites for tests at constant strain amplitude

Bao-Tong Ma and C. Laird 337 Overview No. 77: Overview of fatigue behavior in copper single crystals—II. Population, size distribution and growth kinetics of Stage I cracks for tests at constant strain amplitude

Bao-Tong Ma and C. Laird 349 Overview No. 77: Overview of fatigue behavior in copper single crystals—III. Interpretation of crack growth kinetics and a new approach to predict fatigue life based on crack population density in specimens cycled at constant strain amplitude

Bao-Tong Ma and C. Laird 357 Overview No. 77: Overview of fatigue behavior in copper single crystals—IV. Strain and load interaction effects for tests under variable amplitude

Bao-Tong Ma and C. Laird 369 Overview No. 77: Overview of fatigue behavior in copper single crystals—V. Short crack growth behavior and a new approach to summing cumulative damage and predicting fatigue life under variable amplitudes

G. B. Olson, H. K. D. H. Bhadeshia and M. Cohen 381 Coupled diffusional/displacive transformations

U. Gahn and W. Pitsch 391 Cross-over effect of single-phase short-range ordered alloys —Monte Carlo study

D. G. Konitzer and M. H. Loretto 397 Microstructural assessment of Ti6Al4V–TiC metal–matrix composite

T. C. Lee, I. M. Robertson and H. K. Birnbaum 407 An HVEM *in situ* deformation study of nickel doped with sulfur

S. Chevacharoenkul and R. F. Davis 417 Dislocation mechanisms, diffusional processes and creep behavior in NbC_x

P. Mathur, D. Apelian and A. Lawley 429 Analysis of the spray deposition process

P. E. Donovan 445 A yield criterion for $Pd_{40}Ni_{40}P_{20}$ metallic glass

W. L. Morris, B. N. Cox and M. R. James 457 Localized surface deformation of an Al–4% Cu alloy in fatigue

C. Servant and G. Cizeron 465 Contribution to the crystallography of the bainite transformation in a high strength low alloy steel 40 NSCD 7–7–3 (AISI 300M)

X. M. Zhang, E. Gautier and A. Simon	477	Martensite morphology and habit plane transitions during tensile tests for Fe–Ni–C alloys
X. M. Zhang, E. Gautier and A. Simon	487	Orientation relationships of deformation-induced martensite in Fe–Ni–C alloys
H. Kurishita, H. Yoshinaga and H. Nakashima	499	The high temperature deformation mechanism in pure metals
Y. Liu, T. Takasugi, O. Izumi and T. Yamada	507	The influence of hydrogen on deformation and fracture processes in Co_3Ti polycrystals and single crystals
Z. M. Guan, G. X. Liu, D. B. Williams and M. R. Notis	519	Diffusion-induced grain boundary migration and associated concentration profiles in a Cu–Zn alloy
N. Christodoulou	529	Evolution of the Bauschinger effect in tension and compression in Zircaloy-2
R. Godse and J. Gurland	541	A statistical model for low temperature cleavage fracture in mild steels
M. Menyhard, B. Blum and C. J. McMahon Jr	549	Grain boundary segregation and transformations in Bi-doped polycrystalline copper
A. H. Heuer, V. Lanteri and A. Dominguez-Rodriguez	559	High-temperature precipitation hardening of Y_2O_3 partially-stabilized ZrO_2 (Y-PSZ) single crystals
V. Jayaram and C. G. Levi	569	The structure of δ-alumina evolved from the melt and the $\gamma \rightarrow \delta$ transformation
W. G. Wolfer, C. D. Van Siclen, S. M. Foiles and J. B. Adams	579	Helium solubility in solid and liquid nickel
P. Neuhaus, C. Herzig and W. Gust	587	Grain boundary diffusion of indium in nickel and nickel–indium
Y. Koyama and H. Suzuki	597	The simple hexagonal to β-Sn martensitic transition in Sn–(7.0–9.5) at.% In alloys
T. Muschik, W. A. Kaysser and T. Hehenkamp	603	Melting of Cu–In solid solutions at small superheating by droplet formation and liquid film migration
A. M. Mayes and M. Olvera de la Cruz	615	Strain effects on the thermal stability of rod eutectics
D. J. Srolovitz	621	On the stability of surfaces of stressed solids
A. D. Rollett, D. J. Srolovitz, R. D. Doherty and M. P. Anderson	627	Computer simulation of recrystallization in non-uniformly deformed metals

J. Gayda and D. J. Srolovitz	641	A Monte Carlo-finite element model for strain energy controlled microstructural evolution: "rafting" in superalloys
M. Sutcu	651	Weibull statistics applied to fiber failure in ceramic composites and work of fracture
R. M. K. Young and T. W. Clyne	663	Intra-crystalline liquation as a result of solute supersaturation in metallic slurries
J. A. Peters, J. V. Bee, B. Kolk and G. G. Garrett	675	On the mechanisms of tempered martensite embrittlement
N. Behnood and J. T. Evans	687	Plastic deformation and the flow stress of aluminium–lithium alloys
F. F. Lange	697	Densification of powder rings constrained by dense cylindrical cores
V. Raman, T. Watanabe and T. G. Langdon	705	A determination of the structural dependence of cyclic migration in polycrystalline aluminum using electron channeling pattern analysis
A. H. Chokshi and T. G. Langdon	715	The influence of rolling direction on the mechanical behavior and formation of cavity stringers in the superplastic Zn–22% Al alloy
V. Raman and T. G. Langdon	725	An examination of cyclic grain boundary migration and cavitation in an Al–3% Mg solid solution alloy
P. Lin, S. S. Lee and A. J. Ardell	739	Scaling characteristics of dislocation link length distributions generated during the creep of crystals

NUMBER 3

M. Kato, M. Wada, A. Sato and T. Mori	749	Overview No. 78: Epitaxy of cubic crystals on (001) cubic substrates
Yiwen Mou and H. I. Aaronson	757	The carbon–carbon interaction energy in alpha Fe–C alloys
S. C. Lim, M. F. Ashby and J. H. Brunton	767	The effects of sliding conditions on the dry friction of metals
J. W. Cahn	773	Interfacial free energy and interfacial stress: the case of an internal interface in a solid
B. C. Muddle and I. J. Polmear	777	The precipitate Ω phase in Al–Cu–Mg–Ag alloys
C. P. Luo and G. C. Weatherly	791	The crystallography of heterogeneous nucleation in a Ni–45 wt% Cr alloy
J.-E. Bidaux, R. Schaller and W. Benoit	803	Study of the h.c.p.–f.c.c. phase transition in cobalt by acoustic measurements

V. Perovic and G. C. Weatherly	813	The β to α transformation in a Zr–2.5 wt% Nb alloy
B. Fultz	823	Kinetic paths in two order parameters: theory
S. P. Ringer, W. B. Li and K. E. Easterling	831	On the interaction and pinning of grain boundaries by cubic shaped precipitate particles
S. V. Raj and T. G. Langdon	843	Creep behavior of copper at intermediate temperatures—I. Mechanical characteristics
W. Mader and M. Rühle	853	Electron microscopy studies of defects at diffusion-bonded Nb/Al_2O_3 interfaces
O. Popoola, M. F. Denanot, P. Moine, J. P. Villain, M. Cahoreau and J. Caisso	867	Microstructural and analytical characterization of TiN_x precipitation in N^+ implanted equiatomic NiTi alloys
R. Duclos, J. Crampon and B. Amana	877	Structural and topological study of superplasticity in zirconia polycrystals
A. K. Jena, A. K. Gupta and M. C. Chaturvedi	885	A differential scanning calorimetric investigation of precipitation kinetics in the Al–1.53 wt% Cu–0.79 wt% Mg alloy
N. N. Thadhani, A. H. Mutz and T. Vreeland Jr	897	Structure/property evaluation and comparison between shock-wave consolidated and hot-isostatically pressed compacts of RSP Pyromet 718 alloy powders
A. G. Evans and J. W. Hutchinson	909	Effects of non-planarity on the mixed mode fracture resistance of bimaterial interfaces
M. S. Hu and A. G. Evans	917	The cracking and decohesion of thin films on ductile substrates
Chung-Min Chang and S. K. Varma	927	Vacancy versus pipe diffusion mechanisms for subgrain growth in OFHC copper
C. Templier, J. C. Desoyer, H. Garem and J. P. Riviere	933	Rhomboedron structure of xenon bubbles in Xe implanted Al
T. Watanabe, H. Fujii, H. Oikawa and K. I. Arai	941	Grain boundaries in rapidly solidified and annealed Fe–6.5 mass% Si polycrystalline ribbons with high ductility
A. Landau, G. Kimmel and M. Talianker	953	Deformation induced transformation in as-quenched uranium–4 at.% titanium alloy
G. M. Swallowe, J. E. Field, C. S. Rees and A. Duckworth	961	A photographic study of the effect of ultrasound on solidification
L. C. Lim	969	Cavity nucleation at high temperatures involving pile-ups of grain boundary dislocations—effect of solutes and impurities

S. R. MacEwen, C. Tome and J. Faber Jr 979 Residual stresses in annealed Zircaloy

NUMBER 4

W. W. Mullins and J. Viñals 991 Overview No. 79: Self-similarity and growth kinetics driven by surface free energy reduction

D. J. Miller, J. W. Sears and H. L. Fraser 999 Characterization of metastable phases in a rapidly solidified Nb–22Si alloy

M. R. Fitzsimmons and S. L. Sass 1009 The atomic structure of the $\Sigma = 13(\theta = 22.6°)[001]$ twist boundary in gold determined using quantitative X-ray diffraction techniques

J. D. L'Ecuyer and G. L'Espérance 1023 Precipitation interactions with dynamic recrystallization of a HSLA steel

F. W. Gayle and B. Vandersande 1033 Phase transformations in the Al–Li–Zr system

W. B. Hutchinson 1047 Recrystallisation textures in iron resulting from nucleation at grain boundaries

B. L. Vaandrager and G. M. Pharr 1057 Compressive creep of copper containing a liquid bismuth intergranular phase

W. D. Nix, J. C. Earthman, G. Eggeler and B. Ilschner 1067 The principal facet stress as a parameter for predicting creep rupture under multiaxial stresses

A. Karimi 1079 Cavitation erosion of austenitic stainless steel and effect of boron and nitrogen ion implantation

D. L. Davidson and K. S. Chan 1089 The crystallography of fatigue crack initiation in coarse grained Astroloy at 20°C

A. Tolley, D. Rios Jara and F. C. Lovey 1099 18R to 2H transformations in Cu–Zn–Al alloys

V. Laxmanan 1109 Morphological transitions in the rapid solidification regime: a re-examination of the fundamental validity of the absolute stability concept of Mullins and Sekerka

M. J. Mayo and W. D. Nix 1121 Direct observation of superplastic flow mechanisms in torsion

N. Kataoka, K. Sumiyama and Y. Nakamura 1135 Thermal stability of nonequilibrium crystalline Fe–Ag alloys produced by vapor quenching

M. D. Dupouy, D. Camel and J. J. Favier 1143 Natural convection in directional dendritic solidification of metallic alloys—I. Macroscopic effects

J. Baur, W. Benoit and H. Schultz 1159 The dislocation–internal friction peak γ in tantalum

S. Sircar, J. Singh and J. Mazumder — 1167 — Microstructure evolution and nonequlibrium phase diagram for Ni–Hf binary alloy produced by laser cladding

R. Maurer and H. F. Fischmeister — 1177 — Low energy heterophase boundaries in the system silver/nickel and in other weakly bonded systems

T. Leffers and P. Van Houtte — 1191 — Calculated and experimental orientation distributions of twin lamellae in rolled brass

S. Hagège — 1199 — Description en coincidence des macles de déformation dans les métaux de structure hexagonale compacte

K. S. Chan — 1217 — A new criterion for brittle-to-ductile fracture transition

A. D. Rollett, D. J. Srolovitz and M. P. Anderson — 1227 — Simulation and theory of abnormal grain growth—anisotropic grain boundary energies and mobilities

R. Shimizu and J. Harase — 1241 — Coincidence grain boundary and texture evolution in Fe–3%Si

J. G. Conley, M. E. Fine and J. R. Weertman — 1251 — Effect of lattice disregistry variation on the late stage phase transformation behavior of precipitates in Ni–Al–Mo alloys

D. C. Agrawal and R. Raj — 1265 — Measurement of the ultimate shear strength of a metal–ceramic interface

i *Announcement*

NUMBER 5

1271 *Editor's Note*

M. F. Ashby — 1273 — Overview No. 80: On the engineering properties of materials

Y. M. Koo and J. B. Cohen — 1295 — The structure of GP zones in Cu–10.9at.% Be

W. A. Świątnicki and M. W. Grabski — 1307 — Boron influence on grain boundary dislocations mobility in Ni_3Al

C. Y. Barlow and N. Hansen — 1313 — Deformation structures in aluminium containing small particles

C. McCullough, J. J. Valencia, C. G. Levi and R. Mehrabian — 1321 — Phase equilibria and solidification in Ti–Al alloys

H. Inui, H. Mori and H. Fujita — 1337 — Electron irradiation induced crystalline–amorphous transition in ceramics

K. T. Miller and F. F. Lange — 1343 — The morphological stability of polycrystalline fibers

A. Dolgopolsky, V. Karbhari and S. S. Kwak	1349	Microcrack induced toughening—an interaction model
C. A. Volkert and F. Spaepen	1355	Crossover relaxation of the viscosity of $Pd_{40}Ni_{40}P_{19}Si_1$ near the glass transition
M. Arita, M. Koiwa and S. Ishioka	1363	Diffusion mechanisms in ordered alloys—a detailed analysis of six-jump vacancy cycle in the B2 type lattice
N. Ryum and O. Hunderi	1375	On the analytic description of normal grain growth
T. O. Saetre, O. Hunderi and N. Ryum	1381	Modelling grain growth in two dimensions
S. J. Goodwin, F. W. Noble and B. L. Eyre	1389	Inclusion nucleated ductile fracture in stainless steel
Y. Enomoto and K. Kawasaki	1399	Computer simulation of Ostwald ripening with elastic field interactions
G. M. Bond, I. M. Robertson and H. K. Birnbaum	1407	On the mechanisms of hydrogen embrittlement of Ni_3Al alloys
May-Ying Chu, L. C. De Jonghe and M. N. Rahaman	1415	Effect of temperature on the densification/creep viscosity during sintering
R. Ramesh, G. Thomas and B. M. Ma	1421	Improvement in intrinsic coercivity of sintered Fe–Nd–B magnets by the introduction of non-magnetic dispersoids
J. Ortín and A. Planes	1433	Thermodynamics of thermoelastic martensitic transformations
A. P. Tsai, A. Inoue, Y. Bizen and T. Masumoto	1443	Kinetics of the amorphous to icosahedral structure transition in Al–Cu–V and Al–Mn–Si alloys
W. Mangen and E. Nembach	1451	The effect of grain size on the yield strength of the γ'-hardened superalloy NIMONIC PE16
M. S. Kim, S. Hanada, S. Watanabe and O. Izumi	1465	Temperature and orientation dependence of the deformation and fracture in $Ni_{75}Al_{20}Ti_5$ single crystals
R. D. K. Misra and T. V. Balasubramanian	1475	Co-operative and site-competitive interaction processes at the grain boundaries of a Ni–Cr–Mo–V steel
C. A. Hippsley and J. H. DeVan	1485	A study of high temperature crack growth in nickel–aluminide
G. M. Camus, N. S. Stoloff and D. J. Duquette	1497	The effect of order on hydrogen embrittlement of Ni_3Fe
J. Kwieciński and J. W. Wyrzykowski	1503	Kinetics of recovery on grain boundaries in polycrystalline aluminium

G. S. Reddy and J. A. Sekhar 1509 Moderate pressure solidification: undercooling at moderate cooling rates

NUMBER 6

F. R. N. Nabarro 1521 Overview No. 81: Work hardening and dynamical recovery of f.c.c. metals in multiple glide

C. Donadille, R. Valle, P. Dervin and R. Penelle 1547 Overview No. 82: Development of texture and microstructure during cold-rolling and annealing of f.c.c. alloys: example of an austenitic stainless steel

S. Nourbakhsh and P. Chen 1573 Microstructure and mechanical properties of rapidly solidified and annealed Ni–Al intermetallic alloys

C. Lexcellent 1585 Tentative de corrélation entre le fluage et la diffusion des solutions solides fortement concentrées [type CuZn(β)]

J. J. Hoyt, B. Clark, D. de Fontaine, J. P. Simon and O. Lyon 1597 A synchrotron radiation study of phase separation in Al–Zn alloys—I. Kinetics

J. J. Hoyt and D. de Fontaine 1611 A synchrotron radiation study of phase separation in Al–Zn alloys—II. Scaling

R. Monzen, K. Kitagawa and T. Mori 1619 Boundary sliding and elastic distortion in Cu bicrystals with boundary precipitates

Y. Gao, S. A. Dregia and P. G. Shewmon 1627 Energy and structure of (001) twist interphase boundaries in the Ag/Ni system

T. E. Hsieh and R. W. Balluffi 1637 Experimental study of grain boundary melting in aluminum

E. K. H. Li and P. D. Funkenbusch 1645 Modeling of the densification rates of monosized and bimodal-sized particle systems during Hot Isostatic Pressing (HIP)

M. Kaya and R. W. Smith 1657 The discontinuous coarsening reactions in the Pb–Cd and the Zn–Cd lamellar eutectic alloys—I. The driving force, initiation and the morphology

M. Kaya and R. W. Smith 1667 The discontinuous coarsening reactions in the Pb–Cd and the Zn–Cd lamellar eutectic alloys—II. Growth kinetics

G. N. Haidemenopoulos, M. Grujicic, G. B. Olson and Morris Cohen 1677 Transformation microyielding of retained austenite

T. H. Alden 1683 A theoretical study of the rate sensitivity of deformation in iron and other materials

	i	1989 *Acta Metallurgica* Gold Medal
A. T. Paxton and A. P. Sutton	1693	Overview No. 83: A tight-binding study of grain boundaries in silicon
P. Šittner and V. Paidar	1717	Observation and interpretation of grain boundary compatibility effects in Fe–3.3wt%Si bicrystals
J. P. Simon and O. Lyon	1727	Phase separation in a Fe–Cr–Co alloy studied by anomalous small angle X-ray scattering
J. C. Malzahn Kampe, T. H. Courtney and Y. Leng	1735	Shape instabilities of plate-like structures—I. Experimental observations in heavily cold worked *in situ* composites
T. H. Courtney and J. C. Malzahn Kampe	1747	Shape instabilities of plate-like structures—II. Analysis
R. F. Cooper, D. L. Kohlstedt and K. Chyung	1759	Solution–precipitation enhanced creep in solid–liquid aggregates which display a non-zero dihedral angle
E. Pink	1773	The effect of precipitates on characteristics of serrated flow in AlZn5Mg1
Xingzhong Zhao, Xingfang Wu and Tsun Ko	1783	Premartensite phase transformation in TiNi alloy
L. Battezzati and A. L. Greer	1791	The viscosity of liquid metals and alloys
J. A. Spittle and S. G. R. Brown	1803	Computer simulation of the effects of alloy variables on the grain structures of castings
M. Sugano, S. Kanno and T. Satake	1811	Fatigue behavior of titanium in vacuum
M. H. Wu, J. Perkins and C. M. Wayman	1821	Long range order, antiphase domain structures, and the formation mechanism of α_1 ("Bainite") plates in a Cu–Zn–Al alloy
M. Gündüz and J. D. Hunt	1839	Solid–liquid surface energy in the Al–Mg system
M. F. Ashby, F. J. Blunt and M. Bannister	1847	Flow characteristics of highly constrained metal wires
M. L. Mecartney and M. Rühle	1859	*In situ* transmission electron microscopy observations of the monoclinic to tetragonal phase transformation in tetragonal ZrO_2
C. Zubillaga, F. Hernandez, J. J. Urcola and M. Fuentes	1865	Experimental analysis of tungsten coarsening in a heavy metal during liquid phase sintering
S. Miyazaki, K. Otsuka and C. M. Wayman	1873	The shape memory mechanism associated with the martensitic transformation in Ti–Ni alloys—I. Self-accommodation

S. Miyazaki, K. Otsuka and C. M. Wayman	1885	The shape memory mechanism associated with the martensitic transformation in Ti–Ni alloys—II. Variant coalescence and shape recovery
J. Cheng and A. J. Ardell	1891	Enhanced ordering and stability of Pd_8W in proton irradiated Pd–W alloys
R. Nakkalil and S. P. Gupta	1903	Kinetics of cellular dissolution in a Cu–Cd alloy
P. Shewmon, Y. L. Shen, C. H. Shen and M. Meshii	1913	Analysis of diffusion controlled release of hydrogen from nickel and INCONEL 600
B. J. Dalgleish, K. P. Trumble and A. G. Evans	1923	The strength and fracture of alumina bonded with aluminum alloys
B. N. Cox, D. B. Marshall and M. D. Thouless	1933	Influence of statistical fiber strength distribution on matrix cracking in fiber composites
C. Koestler, R. Ramesh, C. J. Echer, G. Thomas and J. Wecker	1945	Microstructure of melt spun Nd–Fe–Co–B magnets
J. E. Hack, S. P. Chen and D. J. Srolovitz	1957	A kinetic criterion for quasi-brittle fracture
C. L. Trybus and W. A. Spitzig	1971	Characterization of the strength and microstructural evolution of a heavily cold rolled Cu–20% Nb composite
D. Wolf	1983	Structure–energy correlation for grain boundaries in f.c.c. metals—I. Boundaries on the (111) and (100) planes
E. L. Maksimova, E. I. Rabkin, L. S. Shvindlerman and B. B. Straumal	1995	Phase transitions at grain boundaries in the presence of impurities
J. R. Dryden and G. R. Purdy	1999	The effect of graphite on the mechanical properties of cast irons
J. R. Dryden, D. Kucerovsky, D. S. Wilkinson and D. F. Watt	2007	Creep deformation due to a viscous grain boundary phase
H. R. Wenk, G. Canova, A. Molinari and H. Mecking	2017	Texture development in halite: comparison of Taylor model and self-consistent theory
Shih-Chin Chang, Duen-Huei Hou and Yun-Kie Chang	2031	The effect of textures and grain shape on the shear band formation in rolled f.c.c. metals
D. C. Agrawal and R. Raj	2035	Autonucleation of cavities in thin ceramic films

A. Turnbull, M. W. Carroll and D. H. Ferriss	2039	Analysis of hydrogen diffusion and trapping in a 13% chromium martensitic stainless steel
E. Werner	2047	The spheroidization of thin plates
N. Y. Jin	2055	Formation of dislocation structures during cyclic deformation of f.c.c. crystals—I. Formation of PSBs in crystals oriented for single-slip
J. Kameda	2067	A microscopic model for the void growth behavior
C. P. Ostertag, P. G. Charalambides and A. G. Evans	2077	Observations and analysis of sintering damage
R. Sasikumar, T. R. Ramamohan and B. C. Pai	2085	Critical velocities for particle pushing by moving solidification fronts
P. Gilormini	2093	The theory of rate sensitive pencil glide application to rolling textures

NUMBER 8

D. B. Knorr, R. M. Cannon and R. L. Coble	2103	Overview No. 84: An analysis of diffusion and diffusional creep in stoichiometric and hyperstoichiometric uranium dioxide
P. P. Müller, B. Schönfeld, G. Kostorz and W. Bührer	2125	Guinier–Preston I zones in Al–1.75 at.% Cu single crystals
T. E. Hsieh and R. W. Balluffi	2133	Observations of roughening/de-faceting phase transitions in grain boundaries
W. Hickel and W. Knoll	2141	Surface plasmon microscopic imaging of ultrathin metal coatings
W. Hein	2145	Nucleation, growth and coarsening of γ'-precipitates in Ni–5.0 at.% Al–5.8 at.% Ti
R. Bonnet et A. Ati	2153	Observation par MET d'interactions de dislocations aux interfaces γ/γ' d'un superalliage biphasé
Sun Xiukui, Xu Jian and Li Yiyi	2171	Hydrogen permeation behavior in metastable austenitic stainless steels 321 and 304
V. Gerold and H. P. Karnthaler	2177	On the origin of planar slip in f.c.c. alloys
D. R. Haeffner and J. B. Cohen	2185	X-ray diffuse scattering study of G.P. zones in Al–4 at.% Zn
L. S. Tóth, K. W. Neale and J. J. Jonas	2197	Stress response and persistence characteristics of the ideal orientations of shear textures

B. Raj, B. B. Jha and P. Rodriguez	2211	Frequency spectrum analysis of acoustic emission signal obtained during tensile deformation and fracture of an AISI 316 type stainless steel
F. R. N. Nabarro	2217	The mechanism of Harper–Dorn creep
M. Hayakawa, N. Kuntani and M. Oka	2223	Structural study on the tetragonal to monoclinic transformation in arc-melted ZrO_2–2 mol.%Y_2O_3—I. Experimental observations
M. Hayakawa and M. Oka	2229	Structural study on the tetragonal to monoclinic transformation in arc-melted ZrO_2–2 mol.%Y_2O_3—II. Quantitative analysis
J. H. Schneibel and L. Martinez	2237	Crack-like creep cavitation in a nickel aluminide
S. Eucken and T. W. Duerig	2245	The effects of pseudoelastic prestraining on the tensile behaviour and two-way shape memory effect in aged NiTi
Y. J. M. Brechet and G. R. Purdy	2253	A phenomenological description for chemically induced grain boundary migration
Y. J. M. Brechet, J. R. Dryden and G. R. Purdy	2261	Diffusion induced motion of a wall of dislocations
Jian Ku Shang and R. O. Ritchie	2267	On the particle-size dependence of fatigue-crack propagation thresholds in SiC-particulate-reinforced aluminum–alloy composites: role of crack closure and crack trapping
N. J. Petch and R. W. Armstrong	2279	Work-hardening in cleavage fracture toughness
M. Menyhard and C. J. McMahon Jr	2287	On the effect of molybdenum in the embrittlement of phosphorus-doped iron

NUMBER 9

M. D. Thouless	2297	A re-examination of the analysis of toughening in brittle-matrix composites
R. J. Tarento and G. Blaise	2305	Studies of the first steps of thin film interdiffusion in the Al–Ni system
W. A. Zdaniewski	2313	Fracture of polycrystalline TiB_2–AlN composites in various environments
F. C. Lovey, A. Hazarabedian and J. E. Garces	2321	The relative stability of dislocations embedded in the β phase matrix and in martensite phases in copper based alloys
F. Chassagne, M. Bessiere, Y. Calvayrac, P. Cenedese and S. Lefebvre	2329	X-ray diffuse scattering investigation of different states of local order in Ni–Al solid solutions

M. Afyouni, V. Pierron-Bohnes and M. C. Cadeville	2339	SRO relaxation in dilute NiAl solid solution through 4 K resistometry
M. Wada, A. Fujii, T. Komazaki and T. Mori	2349	FIM observation of nitrogen GP zones in iron
S. E. Babcock and R. W. Balluffi	2357	Grain boundary kinetics—I. *In situ* observations of coupled grain boundary dislocation motion, crystal translation and boundary displacement
S. E. Babcock and R. W. Balluffi	2367	Grain boundary kinetics—II. *In situ* observations of the role of grain boundary dislocations in high-angle boundary migration
Y. Ohba and N. Sakuma	2377	High temperature–room temperature deformation behavior of $MgCu_2$ Laves phase intermetallic compound
V. Radmilovic, A. G. Fox and G. Thomas	2385	Spinodal decomposition of Al-rich Al–Li alloys
S. V. Kamat, J. P. Hirth and R. Mehrabian	2395	Mechanical properties of particulate-reinforced aluminum–matrix composites
C. Servant, O. Lyon and J. P. Simon	2403	Anomalous small-angle X-ray scattering determination of the partial structure factors of an aged Fe–Ni–W alloy: a synchrotron radiation study
Y. Flom and R. J. Arsenault	2413	Effect of particle size on fracture toughness of SiC/Al composite material
A. Hill and E. R. Wallach	2425	Modelling solid-state diffusion bonding
W. Blum, A. Rosen, A. Cegielska and J. L. Martin	2439	Two mechanisms of dislocation motion during creep
U. Gahn and W. Pitsch	2455	Correlations between short-range order parameters during short-range order reactions
I.-C. Hwang, T. Suzuki and M. Wuttig	2463	Premartensitic time dependent X-ray scattering and stress relaxation in an indium–thallium alloy
Y. Brechet and F. Louchet	2469	On the stability of Orowan loops around coherent spherical ordered precipitates
I. Grimberg, B. Z. Weiss and S. R. Herd	2475	Electrical and structural properties of coevaporated $NiSi_{2\pm x}$ thin films
S. Schumacher, R. Birringer, R. Strauß and H. Gleiter	2485	Diffusion of silver in nanocrystalline copper between 303 and 373 K
J. J. Hoyt	2489	Spinodal decomposition in ternary alloys
Xu Tingdong and Song Shenhua	2499	A kinetic model of non-equilibrium grain-boundary segregation

T. P. Gabb and G. Welsch	2507	The high temperature deformation in cyclic loading of a single crystal nickel-base superalloy
J. J. Valencia, C. McCullough, C. G. Levi and R. Mehrabian	2517	Solidification microstructure of supercooled Ti–Al alloys containing intermetallic phases
Yong-Suk Kim and W. D. Nix	2531	Creep crack growth in copper containing pre-implanted grain boundary cavities
S. Ochiai and K. Osamura	2539	Prediction of variation of upper critical magnetic field of Nb_3Sn superconducting composites as a function of applied stress at room temperature
G. B. Schaffer, M. H. Loretto, R. E. Smallman and J. W. Brooks	2551	The stability of the oxide dispersion in INCONEL alloy MA6000
N. Njah and O. Dimitrov	2559	Microstructural evolution of nickel-rich Ni–Al–Ti alloys during aging treatments: the effect of composition

NUMBER 10

A. G. Evans and D. B. Marshall	2567	Overview No. 85: The mechanical behavior of ceramic matrix composites
M. Militzer and J. Wieting	2585	Segregation mechanisms of temper embrittlement
T. Takeshita, U. F. Kocks and H.-R. Wenk	2595	Strain path dependence of texture development in aluminum
A. Broese van Groenou and S. E. Kadijk	2613	Slip patterns made by sphere indentations on single crystal MnZn ferrite
S. E. Kadijk and A. Broese van Groenou	2625	Cross-slip patterns by sphere indentations on single crystal MnZn ferrite
C. D. Turner, W. O. Powers and J. A. Wert	2635	Microstructure, deformation and fracture characteristics of an $Al_{67}Ni_8Ti_{25}$ intermetallic alloy
Chingshen Li and T. Bretheau	2645	The role of grain boundary compatibility in fatigue cracking of aluminum bicrystals
D. P. Dunham and J. C. Gibeling	2651	Strain rate continuity in 304 stainless steel during stress rate change tests
S. J. Bennison and B. R. Lawn	2659	Role of interfacial grain-bridging sliding friction in the crack-resistance and strength properties of nontransforming ceramics
G. Sines, Z. Yang and B. D. Vickers	2673	Friction stress for carbon composite and carbon yarn during high temperature creep
M. Takeyama and C. T. Liu	2681	Effect of preoxidation and grain size on ductility of a boron-doped Ni_3Al at elevated temperatures

B. Lorenz	2689	Simulation of grain-size distributions in nucleation and growth processes
G. A. Henshall and A. K. Miller	2693	The influence of solutes on flow stress plateaus, with emphasis on back stresses and the development of unified constitutive equations
Joo-Hwan Han, Young-Keun Chung, Doh-Yeon Kim, Sang-Hee Cho and Duk N. Yoon	2705	Temperature dependence of the shape of ZnO grains in a liquid matrix
K. E. Rajab and R. D. Doherty	2709	Kinetics of growth and coarsening of faceted hexagonal precipitates in an f.c.c. matrix—I. Experimental observations
R. D. Doherty and K. E. Rajab	2723	Kinetics of growth and coarsening of faceted hexagonal precipitates in an f.c.c. matrix—II. Analysis
C. Wiesner, J. C. Earthman, G. Eggeler and B. Ilschner	2733	Creep crack growth and cavitation damage in a 12% CrMoV steel
O. Engler, J. Hirsch and K. Lücke	2743	Texture development in Al 1.8 wt% Cu depending on the precipitation state—I. Rolling textures
F. E. Heredia, G. Tichy, D. P. Pope and V. Vitek	2755	Temperature and orientation dependent plastic flow in Pt_3Al
V. Rosato	2759	Comparative behavior of carbon in b.c.c. and f.c.c. iron
B. C. De Cooman and C. B. Carter	2765	The accommodation of misfit at {100} heterojunctions in III–V compound semiconductors by gliding dissociated dislocations
B. C. De Cooman, C. B. Carter, Kam Toi Chan and J. R. Shealy	2779	The characterization of misfit dislocations at {100} heterojunctions in III–V compound semiconductors
P. Ramachandrarao, K. S. Dubey and S. Lele	2795	Free energies of undercooled phases
R. L. Fleischer, R. S. Gilmore and R. J. Zabala	2801	Elastic moduli of polycrystalline, high-temperature binary intermetallic compounds
S. K. Wu and C. M. Wayman	2805	On the reciprocal lattice of the "premartensitic" R-phase in TiNi shape memory alloys
S. M. Foiles	2815	Calculation of the atomic structure of the $\Sigma = 13 (\theta = 22.6°)$ [001] twist boundary in gold
D. Wolf	2823	Structure–energy correlation for grain boundaries in f.c.c. metals—II. Boundaries on the (110) and (113) planes
Y. P. Wu, N. C. Tso, J. M. Sanchez and J. K. Tien	2835	Modeling of ternary site occupation in $L1_2$ ordered intermetallics

B. Fultz, H. H. Hamdeh and D. H. Pearson	2841	Kinetic paths in two order parameters: a Mössbauer spectrometry experiment with FeCo–Mo
M. J. Gore, M. Grujicic, G. B. Olson and M. Cohen	2849	Thermally activated grain boundary unpinning
E. L. Maksimova, L. S. Shvindlerman and B. B. Straumal	2855	Effect of the subsidiary misorientation components on the "special grain boundary–general boundary" transformation in the vicinity of the coincidence misorientation of Σ17 in tin
J. A. Walsh, K. V. Jata and E. A. Starke Jr	2861	The influence of Mn dispersoid content and stress state on ductile fracture of 2134 type Al alloys
T. J. Warner and W. M. Stobbs	2873	Modulus and yield stress anisotropy of short fibre metal–matrix composites
H. Kawazoe, T. Takasugi and O. Izumi	2883	Cyclic deformation of α–β brass two-phase bicrystals—I. Slip behavior
H. Kawazoe, T. Takasugi and O. Izumi	2895	Cyclic deformation of α–β brass two-phase bicrystals—II. Hardening behavior
X. L. He, Y. Y. Chu and J. J. Jonas	2905	The grain boundary segregation of boron during isothermal holding
T. Muschik, W. Gust, S. Hofmann and B. Predel	2917	The temperature dependence of grain boundary segregation in Ni–In bicrystals studied with Auger electron spectroscopy
I. B. Kwon, M. E. Fine and J. Weertman	2927	Microstructural studies on the initiation and growth of small fatigue cracks at 298, 77 and 4.2 K in polycrystalline copper
I. B. Kwon, M. E. Fine and J. Weertman	2937	Fatigue damage in copper single crystals at room and cryogenic temperatures
C. M. Kennefick and R. Raj	2947	Copper on sapphire: stability of thin films at 0.7 T_m
T. S. Kê and C. M. Su	2953	Origin of the high temperature internal friction peak introduced by twisting deformation in aluminium single crystals and bamboo crystals
R. Gerling, F. P. Schimansky and R. Wagner	2961	Radiation-enhanced phase separation in amorphous $Fe_{40}Ni_{40}P_{20}$
H. C. Cao, B. J. Dalgleish, H. E. Dève, C. Elliott, A. G. Evans, R. Mehrabian and G. R. Odette	2969	A test procedure for characterizing the toughening of brittle intermetaliics by ductile reinforcements
W. W. Mullins	2979	Estimation of the geometrical rate constant in idealized three dimensional grain growth

F. R. Brotzen and A. Seeger	2985	Diffusion near dislocations, dislocation arrays and tensile cracks
S. Özbilen and H. M. Flower	2993	Zirconium–vacancy binding and its influence on S′-precipitation in an Al–Cu–Mg alloy
B. D. Flinn, M. Rühle and A. G. Evans	3001	Toughening in composites of $Al_2\bar{O}_3$ reinforced with Al
A. H. Chokshi and A. K. Mukherjee	3007	An analysis of cavity nucleation in superplasticity
W. A. Soffa and D. E. Laughlin	3019	Decomposition and ordering processes involving thermodynamically first-order order → disorder transformations
T. Christman, A. Needleman and S. Suresh	3029	An experimental and numerical study of deformation in metal–ceramic composites
R. V. Ramanujan, J. K. Lee, F. K. Le Goues and H. I. Aaronson	3051	A discrete lattice plane analysis of the energy of coherent $\{0001\}_{h.c.p.} // \{111\}_{f.c.c.}$, $\langle 11\bar{2}0\rangle_{h.c.p.} // \langle 1\bar{1}0\rangle_{f.c.c.}$ interfaces
P. J. Withers, W. M. Stobbs and O. B. Pedersen	3061	The application of the Eshelby method of internal stress determination to short fibre metal matrix composites
Zhou Xiaowang and T. Y. Hsu (Xu Zuyao)	3085	Thermodynamics of the α- and β-phases equilibria and ordering in Cu–Zn system
T. Y. Hsu (Xu Zuyao) and Zhou Xiaowang	3091	Thermodynamics of the martensitic transformation in Cu–Zn alloys
T. Y. Hsu (Xu Zuyao) and Zhou Xiaowang	3095	Thermodynamics of the bainitic transformation in a Cu–Zn alloy
Dongliang Lin (T. L. Lin) and Mao Wen	3099	Dislocation structure due to high temperature deformation in γ' phase of a nickel-base superalloy
N. K. Sinha	3107	Microcrack-enhanced creep in polycrystalline material at elevated temperature

NUMBER 12

P. H. Leo and R. F. Sekerka	3119	Overview No. 86: The effect of surface stress on crystal–melt and crystal–crystal equilibrium
P. H. Leo and R. F. Sekerka	3139	The effect of elastic fields on the morphological stability of a precipitate grown from solid solution
A. Schmitz, M. Chandrasekaran, G. Ghosh and L. Delaey	3151	Elastic anisotropy and the substitutional bainite formation in copper base alloys
Zi-Kui Liu and J. Ågren	3157	On the transition from local equilibrium to paraequilibrium during the growth of ferrite in Fe–Mn–C austenite

Y. Gao, P. G. Shewmon and S. A. Dregia	3165	Investigation of low energy interphase boundaries in Ag/Ni by computer simulation and crystallite rotation
R. Monzen, M. Kato and T. Mori	3177	Diffusional relaxation around martensitically transformed Fe–Co particles in a Cu matrix
J. C. Gibeling	3183	A phenomenological description of creep transients based on anelasticity
M. A. Capano, A. S. Argon and I-W. Chen	3195	Intergranular cavitation during creep in Astroloy
E. Gaffet, J. M. Pelletier and S. Bonnet-Jobez	3205	LASER surface alloying of Ni film on Al-based alloy
D. Kuhlmann-Wilsdorf	3217	Dynamic effects in the mesh length theory of work-hardening
G. Eggeler	3225	The effect of long-term creep on particle coarsening in tempered martensite ferritic steels
P. M. Hazzledine, M. H. Yoo and Y. Q. Sun	3235	The geometry of glide in Ni_3Al at temperatures above the flow stress peak
P. Fratzl and J. L. Lebowitz	3245	Universality of scaled structure functions in quenched systems undergoing phase separation
A. G. Evans, B. J. Dalgleish, M. He and J. W. Hutchinson	3249	On crack path selection and the interface fracture energy in bimaterial systems
Z. S. Basinski and S. J. Basinski	3255	Temperature and rate dependence of saturation stress for low amplitude fatigue of Cu crystals between 4.2 and 350 K
Z. S. Basinski and S. J. Basinski	3263	Copper single crystal PSB morphology between 4.2 and 350 K
Z. S. Basinski and S. J. Basinski	3275	Electrical resistivity of fatigued copper crystals
J. Kameda and A. J. Bevolo	3283	Neutron irradiation-induced intergranular solute segregation in iron base alloys
D. M. Stump and B. Budiansky	3297	Finite cracks in transformation-toughened ceramics
M. Zimmermann, M. Carrard and W. Kurz	3305	Rapid solidification of Al–Cu eutectic alloy by laser remelting
K. P. D. Lagerlöf, T. E. Mitchell and A. H. Heuer	3315	Energetics of the break-up of dislocation dipoles into prismatic loops
H.-J. Gudladt, J. Lendvai and J. Schneider	3327	Precipitation strengthening and its influence on the mechanical behaviour of cyclically deformed Al–Li alloys

J. C. Huang and G. T. Gray	3335	Microband formation in shock-loaded and quasi-statically deformed metals
P. A. Mataga	3349	Deformation of crack-bridging ductile reinforcements in toughened brittle materials
F. Stobiecki	3361	Reactive diffusion in amorphous Fe–B and Co–Zr multilayer films
D. Liu, W. A. Miller and K. T. Aust	3367	Diffusion induced grain boundary migration in Ni–Cu diffusion couples
W. J. Boettinger and M. J. Aziz	3379	Theory for the trapping of disorder and solute in intermetallic phases by rapid solidification
T-P. Perng, M. Johnson and C. J. Altstetter	3393	Influence of plastic deformation on hydrogen diffusion and permeation in stainless steels
C. S. Cheng, W. E. King and M. J. McNallan	3399	Characterization and crystallization studies of melt-spun glassy Fe–22.5 Al–10 Zr metal by analytical electron microscopy
Gao Wei and B. Cantor	3409	The effect of heat treatment and surface treatment on the crystallisation behaviour of amorphous $Fe_{40}Ni_{40}B_{20}$
T. Takasugi, S. Watanabe, O. Izumi and N. K. Fat-Halla	3425	Plastic flow of $Ni_3(Si, Ti)$ single crystals
Corrigendum	3437	